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#2  
195EP01  
R. Tallent

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In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act 1980 with the same name as that with which it was registered immediately before re-registration save for the substitution as, or inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name with which it is so re-registered.

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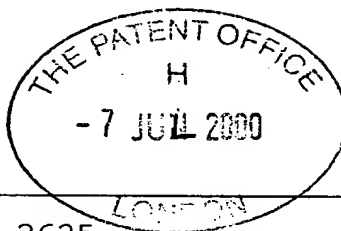
Signed

Dated 25 June 2001



# Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)



The Patent Office

Cardiff Road  
Newport  
Gwent NP9 1RH

07 JUL 2000

1. Your reference

JG-2625

2. Patent application number

(The Patent Office will fill in this part)

0016777.5

10JUL00 E551348-5 D01821  
P01/7700 0.00-0016777.5

3. Full name, address and postcode of the or of each applicant (underline all surnames)

SEOS Displays Limited  
Edward Way  
Burgess Hill  
West Sussex, RH15 9UE  
United Kingdom

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

United Kingdom

691256002

4. Title of the invention

IMPROVED FILM MIRROR

5. Name of your agent (if you have one)

Graham Jones & Company

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

77 Beaconsfield Road  
Blackheath  
London SE3 7LG

Patents ADP number (if you know it)

2097001

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number  
(if you know it)

Date of filing  
(day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing  
(day / month / year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

- a) any applicant named in part 3 is not an inventor, or
  - b) there is an inventor who is not named as an applicant, or
  - c) any named applicant is a corporate body.
- See note (d))

Yes

9. Enter the number of sheets for any of the following items you are filing with this form. Do not count copies of the same document

Continuation sheets of this form

Description

2

Claim(s)

Abstract

Drawing(s)

2 + 2

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

2

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination (Patents Form 10/77)

Any other documents (please specify)

11. I/We request the grant of a patent on the basis of this application.

Signature

Date

7/7/00

12. Name and daytime telephone number of person to contact in the United Kingdom

Mr. G.H. Jones. 020 8858-4039

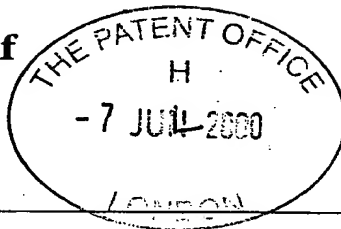
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Statement of inventorship and of  
right to grant of a patent



The Patent Office

Cardiff Road  
Newport  
Gwent NP9 1RH

1. Your reference

JG-2625

2. Patent application number  
(if you know it)

07 JUL 2000

3. Full name of the or of each applicant

SEOS Displays Limited

0016777.5

4. Title of the invention

IMPROVED FILM MIRROR

5. State how the applicant(s) derived the right  
from the inventor(s) to be granted a patent

By virtue of agreement and conditions of employment.

6. How many, if any, additional Patents Forms  
7/77 are attached to this form?  
(see note (c))

1

7.

I/We believe that the person(s) named over the page (and on  
any extra copies of this form) is/are the inventor(s) of the invention  
which the above patent application relates to.

Signature

*Graham Jones*

Date

7-7-00

8. Name and daytime telephone number of  
person to contact in the United Kingdom

Mr. G.H. Jones. 020-8858-4039

Notes

- If you need help to fill in this form or you have any questions, please contact the Patent Office on 0645 500505.
- Write your answers in capital letters using black ink or you may type them.
- If there are more than three inventors, please write the names and addresses of the other inventors on the back of another Patents Form 7/77 and attach it to this form.
- When an application does not declare any priority, or declares priority from an earlier UK application, you must provide enough copies of this form so that the Patent Office can send one to each inventor who is not an applicant.
- Once you have filled in the form you must remember to sign and date it.

**Patents Form 7/77**

Enter the full names, addresses and postcodes of the inventors in the boxes and underline the surnames

Roy Edward Creek  
37 West Point  
Newick  
East Sussex, BN8 4NU  
United Kingdom

6943708001

Patents ADP number (if you know it):

Patents ADP number (if you know it):

**Reminder**

**Have you signed the form?**

Patents ADP number (if you know it):

## Improved Film Mirror

DUPLICATE

This invention relates to a method of constructing a thin film mirror.

The use of thin film mirrors in large display systems is well known. In particular, it is known to use such mirrors of concave, near-spherical form in collimated displays for simulators to be used for training, research, leisure and entertainment.

Such mirrors are usually constructed by fixing the film across the open face of an otherwise enclosed chamber. The edges of the chamber to which the film attaches lie on the surface of the desired mirror shape. In the case of simulators, the mirror chamber is usually part of a sphere, bounded at top and bottom by lines of latitude. The left and right ends of the chamber may be lines of longitude or more complicated arrangements.

When first applied, the film is lightly tensioned such that it forms part of the frustum of a cone. The chamber is then partially evacuated and the greater external air pressure forces the film into an approximately spherical shape. The accuracy of the mirror shape is a major factor in the quality of the image provided by the display system. The chamber edges, the means by which the film is attached and the how the film stretches as the chamber is evacuated all affect the final shape. Various methods are known for improving the mirror in these areas.

It will be appreciated that the film must stretch in going from cone to sphere. In vertical section the film must stretch from straight line to circular arc; in horizontal section it must stretch from circular arc to longer circular arc. However, where it attaches to the fixed chamber edges, it cannot stretch parallel to the edge. Thus the stretch is not uniform across the film. The reduced stretch near the edges of the film results in locally lower tension in the film and a departure from the ideal shape. In vertical section, the film follows a "bathtub" curve, with good curvature over the central region but sharply changing curvature near the edges.

A known process to improve the mirror edge accuracy is to over-stretch the film initially, for up to a few hours, before relaxing it to its design position. However, this still leaves a significant band of poor mirror around the edge. This poor mirror results in objectionable distortion in the image of the display system. To produce an acceptable mirror it is therefore necessary to make the mirror larger and then cover up the poor edge, leaving the required area of useable mirror in the centre.

It will be appreciated that as the display system becomes larger, it becomes more costly to manufacture and its greater mass imposes an increasing load on the simulator. Also, since such simulators are usually mounted on some kind of motion system, the motion envelope expands, requiring a larger, more expensive building to house the simulator. Film of adequate quality is only available up to a certain width, which also limits the size of the system. Such limitations usually result in compromises in the size of the covered edge, so that some distortion is still seen around the edge of the image. Vertical linearity of the image may also be compromised.

It is the aim of this invention to provide improved edge quality for a film mirror without substantial increase in the size of the mirror.

Accordingly, the present invention provides a means for constructing a thin film mirror, which method comprises:





- 1) providing a suction chamber whose edges lie on the required mirror surface
- 2) providing a semi-rigid tube which is forced into contact with the film adjacent to the chamber edge, such that the tension in the film parallel to the edge is increased
- 3) providing clamping means for
  - a) holding the semi-rigid tube
  - b) locally adjusting the clamp pressure on the tube
  - c) feeding the tube into position after the film is attached to the chamber

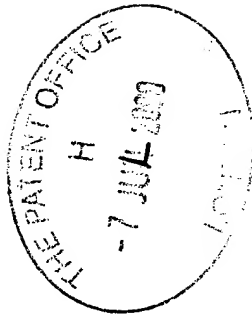
An embodiment of the invention will now be described solely by way of example and with reference to the accompanying drawings in which:

Figure 1 shows a cross-section of a known chamber for producing a thin film mirror

Figure 2 shows an enlargement of an edge of the mirror in Figure 1

Figure 3 shows an enlargement of the edge of the mirror of this invention

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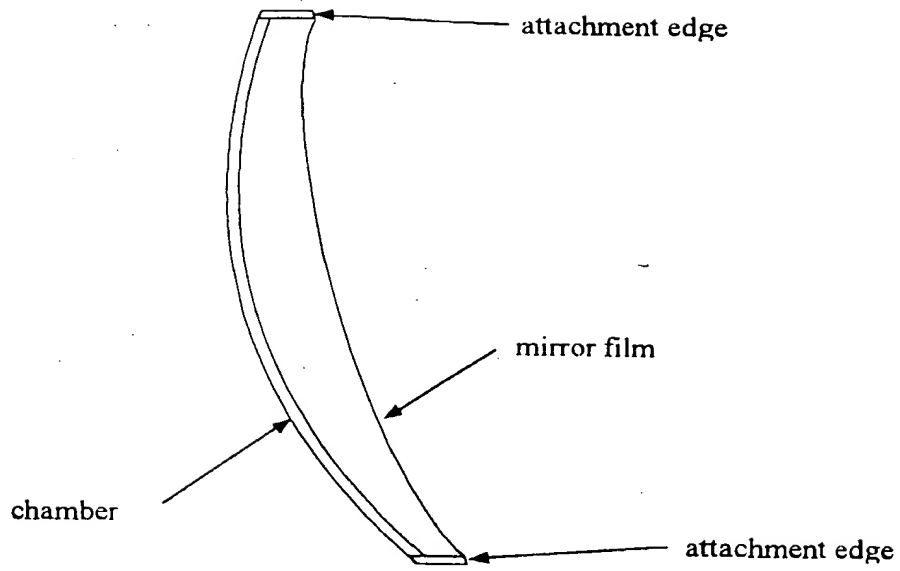


Fig. 1

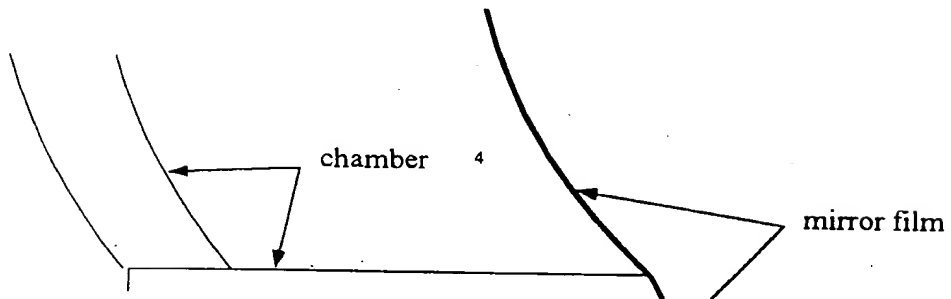


Fig. 2

DISCONTINUE TO BE APPEAL

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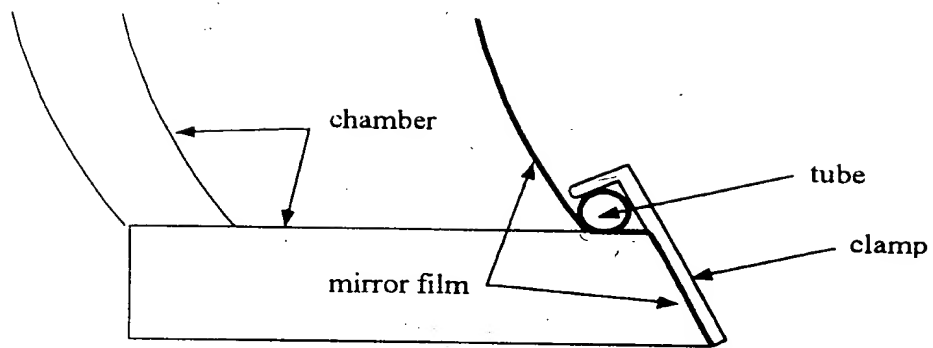


Fig. 3

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